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# An Annotated Bibliography of Selected Publications on the Dungeness Crab (Cancer magister)

by
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State of Alaska Steve Cowper, Governor

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## TABLE OF CONTENTS

## ABSTRACT

This report provides a guide to 240 selected publications on the Dungeness crab, *Cancer magister*. These citations were annotated to the extent that publications were referenced by major subject headings. References were selected for inclusion in this report by emphasizing those of relevance to fisheries biologists and managers. Those references dealing primarily with biochemistry, technology, and processing were purposely underrepresented. Emphasis was placed upon those which were published in refereed journals, numbered publications of state agencies, and master's and doctorate theses. Unnumbered publications in the "grey" literature were generally excluded.



KEY WORDS: Dungeness crab, *Cancer magister*, bibliography, general biology, biological interrelationships, environmental interrelationships, interactions with man

## INTRODUCTION

*Cancer magister* is commonly known as the Dungeness crab, although other names, such as the market crab, commercial crab, and Pacific edible crab have been used to refer to this species. The Dungeness crab is a brachyuran crab, and has been classified by Bowman and Abele (1982) as follows:

Class: Malacostraca Latreille 1806
Subclass: Eumalacostraca Grobben 1892
Superorder: Eucarida Calman 1904
Order: Decapoda Latreille 1803
Suborder: Pleocyemata Burkenroad 1963
Infraorder: Brachyura Latreille 1803
Section: Cancridea Latreille 1803
Superfamily: Cancroidea Latreille 1803
Family: Cancridae
Species: *Cancer magister*

This species occurs along the west coast of North America from Unalaska Island, Alaska, to Magdalena Bay, Mexico (Butler 1967), and is fished commercially from Alaska to California. Commercial landings of Dungeness crabs in Alaska averaged only 10% (4.4 million lbs) of the total U.S. annual landings (43.8 million lbs) over the 1975-1976 through 1979-1980 fishing seasons. However, during the 1980-1981 to 1984-1985 fishing seasons landings in Alaska have increased to average 43% (12.4 million lbs) of the 30.8 million lbs landed annually in the U.S. over this period. Likewise, ex-vessel value (gross receipts) paid to fishermen in Alaska for Dungeness crab landings have increased from $629,000 in 1976 to $12.2 million in 1985. This shift in importance toward Alaskan fisheries for Dungeness crabs, coupled with declines in landings from other shellfish fisheries in Alaska, has resulted in greater need for effective management of this state's Dungeness crab fisheries.

The purpose of this report is to provide a convenient guide to references on the Dungeness crab for fishery biologists and managers. Because many publications have been written on the Dungeness crab since Butler's (1967) bibliography, we felt that it would be useful to have a more up-to-date reference to this literature. To increase the utility of this document, we have annotated the bibliography to the degree that publications are referenced by subject. Subjects were chosen in part from subject headings used by Butler (1967) and Donaldson and Hicks (1978) in their bibliographies.

This is a bibliography of selected references in that no attempt has been made to include all publications dealing with *Cancer magister*. For example, those references dealing primarly with biochemistry, technology and processing are purposely underrepresented. Rather, emphasis has been placed upon those references of relevance to fisheries biologists and managers. Emphasis is also placed upon publications which appeared in refereed journals, numbered publications of state agencies, and master's and doctorate theses. Unnumbered publications in the "grey" literature are generally excluded. For these reasons, this bibliography is incomplete. We have included 240 references, and most of these (221) have been viewed by the primary author. Those unseen have been marked with a footnote (1).

## REFERENCES BY SUBJECT GROUP

### *General Biology*

This section includes the following biological subjects: classification, morphology, life history, distribution, migration, growth, age, molting, maturity, fecundity, mating, reproduction, physiology, behavior and population dynamics. Of these, references dealing with physiology are somewhat underrepresented here. Ecological relationships between Dungeness crabs and either other species or their environment are not included in this section.

Classification and Morphology

23, 86, 90, 127, 130, 135, 142, 157, 177, 178, 179, 185, 195, 197, 198, 218.

General Life History

14, 43, 44, 57, 90, 102, 130, 134, 135, 142, 189, 192, 209.

Distribution: Larvae

14, 41, 58, 90, 91, 102, 130, 131, 170, 189, 192, 196, 199.

Distribution: Postlarvae and Juveniles

9, 33, 41, 54, 59, 85, 102, 133, 143, 199, 206, 208, 209, 214, 226, 229, 232.

Distribution: Adults

37, 43, 54, 102, 133, 135, 136, 143, 199, 206, 224.

Migration and Tagging Studies

29, 34, 44, 45, 49, 51, 52, 53, 54, 81, 102, 114, 128, 133, 135, 141, 151, 152, 167, 202, 204, 209, 219, 222.

Age and Growth: Eggs and Larvae

41, 57, 74, 90, 102, 138, 233.

Age and Growth: Postlarvae and Juveniles

9, 16, 24, 36, 41, 44, 45, 57, 89, 102, 115, 123, 124, 133, 134, 135, 138, 141, 142, 163, 180, 208, 209, 214, 219, 221, 225.

Age and Growth: Adults

16, 17, 34, 36, 44, 47, 56, 86, 88, 89, 102, 121, 128, 133, 134, 135, 138, 141, 142, 163, 180, 202, 219, 221, 222, 225.

Molting

43, 51, 53, 54, 56, 57, 88, 89, 102, 115, 121, 128, 135, 138, 200, 204, 219.

Maturity and Fecundity

35, 44, 57, 72, 86, 87, 88, 89, 102, 135, 138, 142, 160, 219, 225, 235, 236.

Mating and Reproduction

35, 54, 57, 102, 121, 135, 160, 199, 201, 204, 233, 236.

Physiology

1, 2, 13, 30, 60, 61, 75, 83, 98, 99, 100, 101, 104, 112, 120, 126, 139, 146, 147, 169, 173, 182, 183, 212, 239.

Behavior

10, 74, 102, 106, 107, 135, 137, 169, 172, 201, 211, 224.

Cannibalism

17, 22, 48, 57, 87, 127, 210.

Population Dynamics and Models

15, 16, 17, 18, 20, 21, 22, 79, 80, 86, 87, 109, 111, 119, 131, 141, 148, 149, 153, 167, 205, 217, 227.

## *Biological Interrelationships*

Subjects included in this section pertain to relationships between Dungeness crabs and other species through predation and diseases. Because predator-prey relationships change during the course of the life history of Dungeness crabs, references have been disaggregated according to the following stages: larvae, postlarvae and juveniles, and adults.

Prey: Larvae

131, 170, 186.

Prey: Postlarvae and Juveniles

10, 12, 32, 64, 123, 124, 135, 206, 208, 209, 210, 214, 226, 240.

Prey: Adults

12, 32, 64, 78, 102, 127, 135, 141, 174, 204, 206, 210.

Predators and Parasites: Eggs and Larvae

4, 72, 87, 102, 135, 142, 143, 144, 145, 190, 199, 217, 219, 227, 228, 230, 231, 236.

Predators and Parasites: Postlarvae and Juveniles

110, 190, 219.

Predators and Parasites: Adults

73, 82, 95, 102, 110, 118, 204, 219.

Diseases

5, 7, 8, 65, 66, 67, 68, 69, 155.

### *Environmental Interrelationships*

References dealing with environmental interrelationships include those which treat the benthic habitat requirements of postlarvae, juveniles and adults. Also included in this section are those publications which report investigations of relationships between each major life history stage and physical factors such as temperature, salinity, ocean currents, and others.

Benthic Habitat Requirements: Postlarvae and Juveniles

41, 54, 59, 74, 85, 115.

Benthic Habitat Requirements: Adults

9, 54, 204.

Physical Environmental Relationships: Eggs and Larvae

18, 26, 41, 57, 58, 72, 74, 87, 90, 91, 107, 111, 130, 131, 132, 141, 160, 170, 186, 188, 189, 192, 196, 197, 198, 233, 236, 237.

Physical Environmental Relationships: Postlarvae and Juveniles

24, 75, 87, 123, 124, 141, 208, 209, 214, 237.

Physical Environmental Relationships: Adults

21, 72, 75, 87, 136, 141, 160, 175, 207, 211, 236, 237.

## *Interactions with Man*

References grouped in this section cover a wide variety of topics, including culture techniques, effects of pollution, fisheries, research programs, survey methodology and other bibliographies. Of these subjects, publications primarily dealing with marketing and processing are underreported. Many publications dealing with these subjects occur in the "grey" literature and do not meet the criteria chosen for inclusion here. It was also felt that some of this literature was of limited interest to fishery biologists and managers.

Culture Techniques

5, 7, 28, 57, 65, 68, 69, 74, 103, 115, 130, 163, 186, 223, 233, 236.

Pollution Effects

6, 25, 27, 40, 72, 84, 92, 93, 103, 105, 140, 160, 171, 173, 174.

Effects of Capture in Trawls or Pots

3, 48, 55, 95, 167, 215, 216.

Stock Identification using Data on Migration or Biochemical Genetics

52, 81, 94, 158, 163, 203.

Sampling and Survey Methods

14, 76, 77, 85.

Fishery Description, Marketing and Processing

11, 31, 42, 43, 44, 46, 47, 50, 56, 86, 95, 96, 97, 102, 108, 116, 117, 118, 121, 122, 125, 133, 135, 142, 150, 151, 152, 154, 165, 166, 167, 168, 176, 181, 187, 193, 194, 204, 219, 220, 224, 238.

Fishery Management

3, 11, 47, 48, 50, 56, 95, 108, 109, 113, 117, 121, 122, 135, 142, 152, 156, 165, 166, 167, 181, 200, 205, 215, 216, 219, 220.

Fishery Dynamics and Models

15, 18, 19, 20, 22, 70, 71, 80, 119, 129, 148, 149, 153, 159, 167, 191.

Research Program Overviews

39, 62, 63, 161, 162, 163, 164, 181, 184, 213, 234.

Other Bibliographies

38, 167.

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